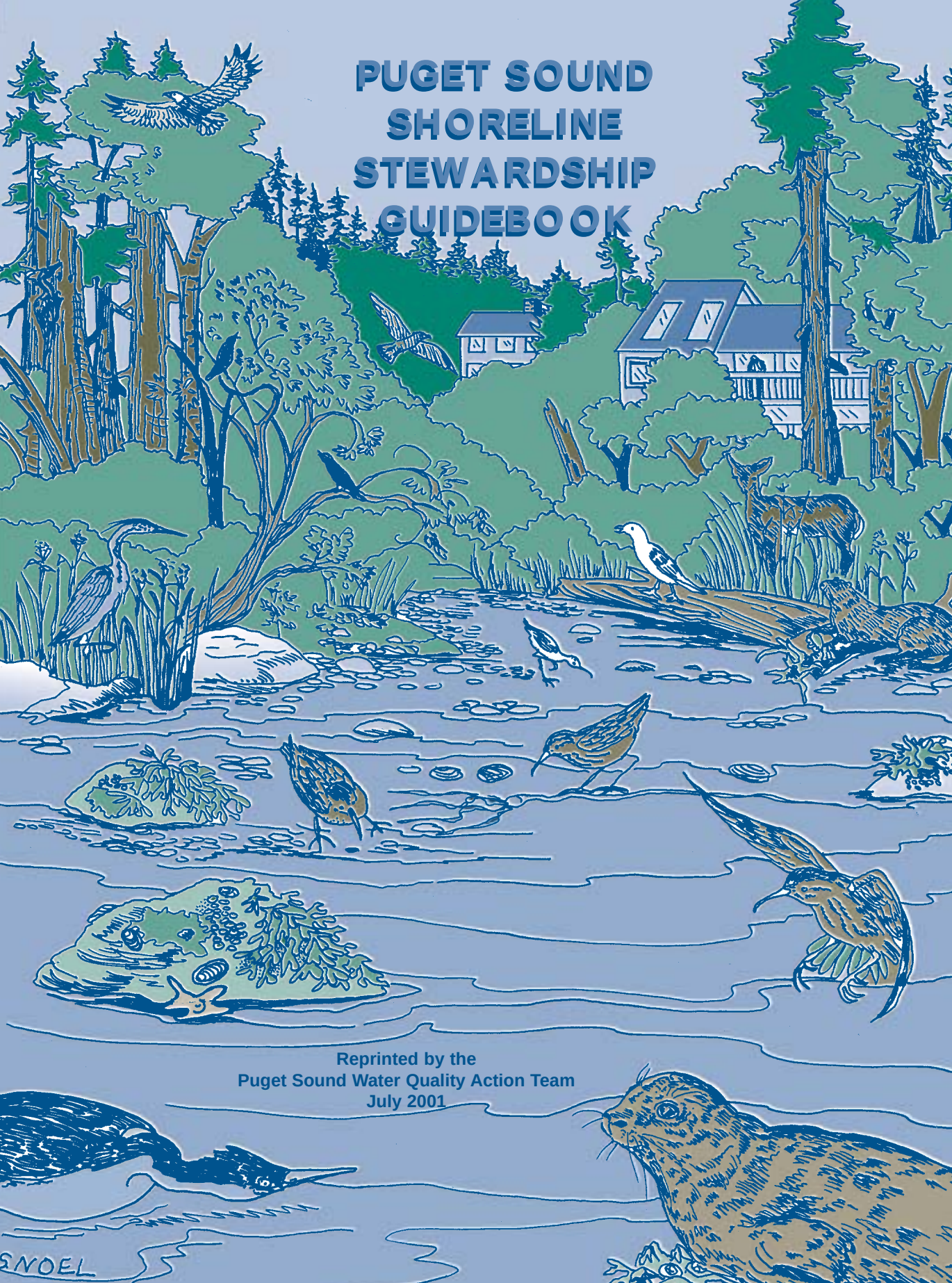
PUGET SOUND SHORELINE STEWARDSHIP GUIDEBOOK



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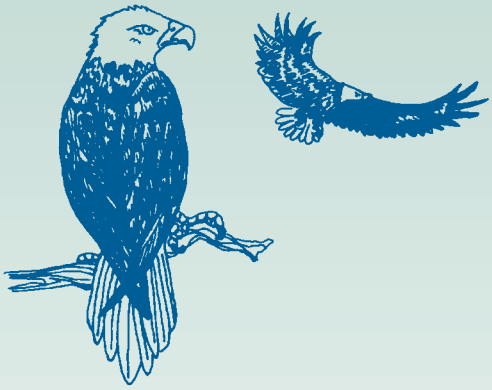
Puget Sound Water Quality Action Team
July 2001

A sample of fish and animals that rely on the Puget Sound shoreline as part of their habitat

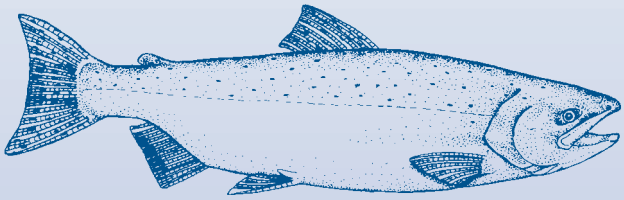


Bald eagles nest in large trees, often at the shore's edge where they perch and look for prey. They are a threatened species. Never disturb them or their nests.

Great blue herons are often seen wading and hunting in shallow waters at the shoreline. They nest in trees. They are wonderful to watch but are scared away easily by noise.

River otters have the best of both worlds, using riverbank and marine shoreline for shelter and food. They have a broad diet, including fish, crabs and birds.

Surf smelt are small forage fish that travel in large schools. They spawn and lay eggs high on the beach. Their spawning habitat may be damaged by construction activities at the high water line.



Young chinook (also known as king salmon) migrate along the Puget Sound shoreline on their journey to the Pacific Ocean. They eat small baitfish and hide from predators in the shallow waters.

Written by Ginny Broadhurst

Illustrated by Sandra Noel

Editing Assistance from David G. Gordon

Special thanks to Brian Lynn, Tim Gates, Hugh Shipman, Jacques White, Jim Johannessen, Bev Isenson, Susan Melrose and Barbara Cothern for their thoughtful review and comments.

Layout by Zoe Rasmussen

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May 1999

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Puget Sound Shoreline Stewardship Guidebook

Living near the water, you're in a prime position to enjoy the beauty of Puget Sound and to witness the forces of nature that continually shape and reshape its beaches.

By being close to the water, your home and property are also more likely to feel the effects of those forces, which at times may even threaten your property.

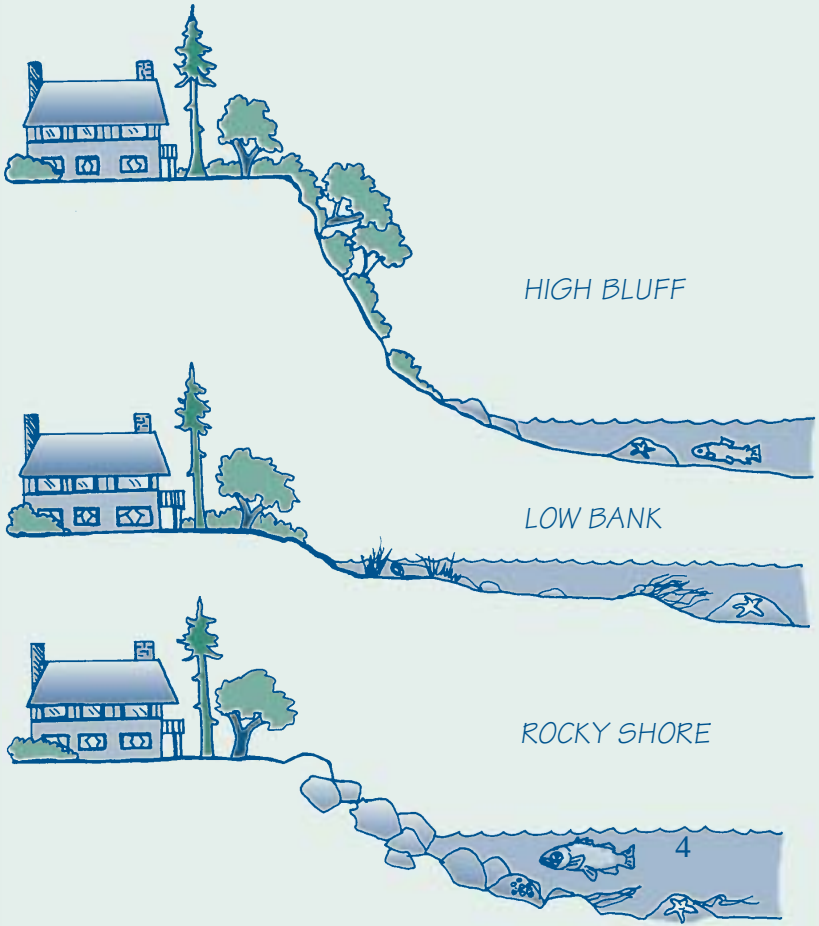
This book is full of "Sound Advice" for your family and friends. It is intended to provide you with a greater understanding of the natural environment at the shoreline and tips for living in harmony with the Sound.

Take a minute:
This guidebook is full of easy tips to help protect Puget Sound.

Make a change:
Take an idea from the guidebook and make a change.

Spread the word:
Share these tips with your neighbors and friends.

KNOW YOUR PLACE



To learn more about your land:

- Check county maps for information about your shoreline, especially about the potential for flooding and erosion.
- Consider hiring a geologist to provide a site-specific assessment of site stability and erosion potential.
- Join a neighborhood group or volunteer with a stewardship group where you can learn more about the shoreline.

Know Your Place

The location of your home and land will make a big difference in how you experience the Sound. Life on a high bluff with a sweeping view of the Sound is very different from that on a low bank or rocky shore, where the water's not far from your door.

Where does your shoreline property lie? What are the risks?

Bluffs are products of thousands of years of erosion. Many bluffs are still eroding slowly and the sand that comes from those bluffs nourishes nearby beaches. Some bluffs can be hit by landslides and other major erosion events that can be unsettling and are sometimes dangerous to waterfront dwellers.

Low Banks provide easy beach access and are generally associated with sandy beaches or mud flats. The materials that make sand spits and beaches come directly from eroding bluffs or possibly from a river mouth nearby. Houses on low banks may be more subject to wind and wave damage, flooding and sometimes severe erosion. Mud beaches usually indicate a more sheltered area where wind and waves are not a problem, but flooding may still occur.

Rocky Shores are made of bedrock and boulders too large to be moved by waves. These shores contain some of the richest habitats in Puget Sound, supporting an array of marine life. This environment generally has no erosion problems.

Water Flow

Development can cause water quantity and water quality problems. Uncontrolled runoff from home sites can trigger small but damaging landslides. Development effects can be minimized through some thoughtful actions on your part. Remember, more water means more problems with saturated soils and possible gullies.

To limit runoff:

- During construction, minimize clearing of trees, shrubs and plants and replant wherever possible.
- Keep much of your land undeveloped. Even lightly forested areas can absorb tremendous amounts of water during storms and help to reduce runoff.
- Whenever possible, use porous surfaces—such as bricks, flagstone, sand or gravel for driveways, patios, walkways or paths—that will allow some absorption.
- Collect drainage from downspouts and pipe it directly to the base of the bank. Inspect and maintain your drainage systems annually.
- Don't overwater your lawn. Most lawns need about 1-1/2 inches per week and can only absorb about 3/10 inch of water per hour—any more than that and you're wasting water and money and increasing the potential for shoreline damage.

Douglas Fir

Douglas fir and Pacific madrone trees are invaluable on waterfront property.

They help stabilize bluffs, offer habitat to wildlife and keep soils from being over-saturated with water.

Pacific Madrone

Best Erosion Control Plants

Native shrubs:
Oceanspray
Snowberry
Salal
Serviceberry
Evergreen huckleberry

Native trees:
Bigleaf maple
Vine maple
Willow
Pacific madrone
Red cedar
Douglas fir

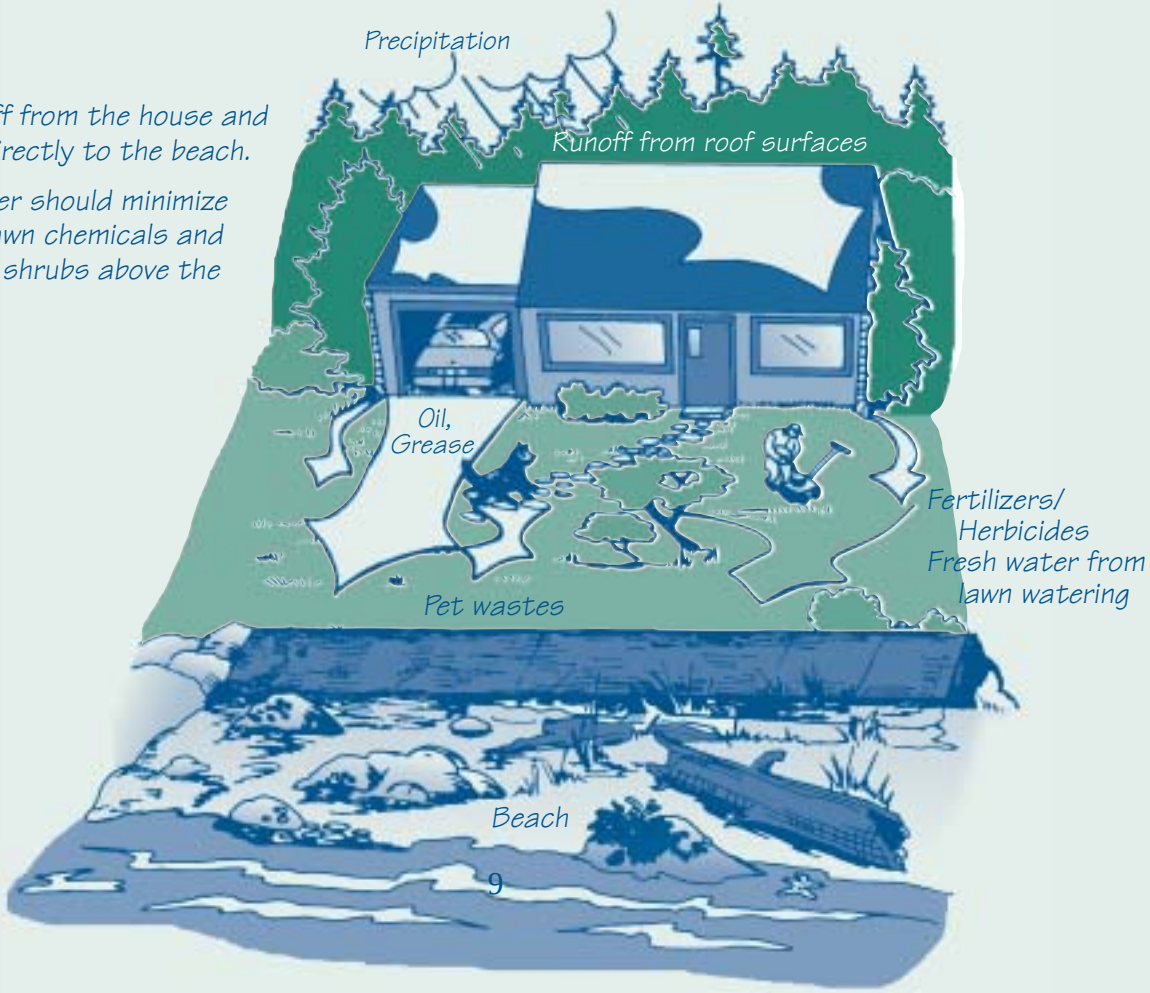
As it flows across the land, rainwater can pick up a nasty assortment of pollutants—oil or grease from roads and driveways, chemicals from gardens and lawns, and even waste from dogs, cats and other pets. The now-contaminated water can be harmful to marine plants and wildlife and make waters unhealthy for swimming. People eating fish and shellfish from the polluted waters can get sick.

To keep runoff clean:

- Keep your car well maintained. Regular tune-ups help prevent leaks.
- Clean up after your pet. Properly dispose of droppings in your trash.
- Wash your car or boat on a lawn, not on pavement, using a mild, phosphate-free soap; or visit a professional car wash, where soapy water is recycled.
- Maintain a healthy buffer strip of native woody plants along the edge of the bluff or shoreline edge. Such a buffer will serve as a filter, slowing runoff and capturing particles and pollutants before they enter the Sound. The roots of these plants will also help to stabilize the soil.
- Follow the suggestions for landscaping on page 10.

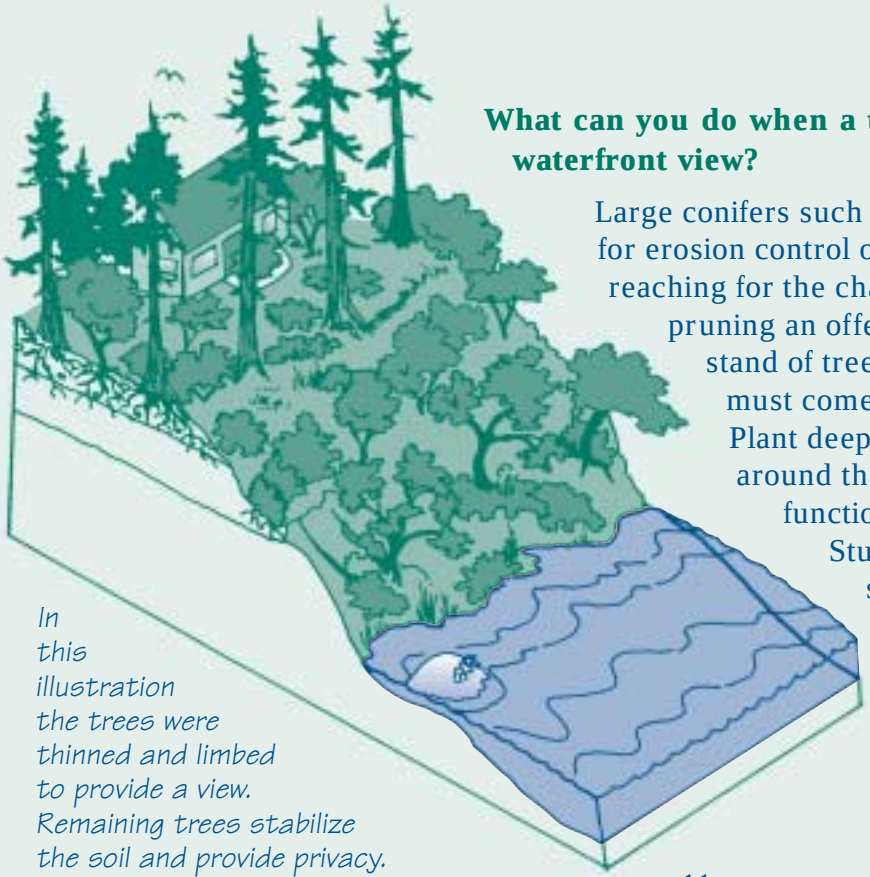
All the runoff from the house and lawn flows directly to the beach.

The landowner should minimize the use of lawn chemicals and plant native shrubs above the bulkhead.



Careful planning allows waterfront dwellers to enjoy their property with views and beach access, while also providing habitat (native trees and shrubs) and shade at the shoreline's edge. Maintaining the stability of your shoreline bluff as a priority of your landscaping plan will save tremendous expense later.

- If you haven't built on the land yet, site your home as far back from the water as possible. This will help prevent erosion concerns.
- While tree-felling may generate some immediate cash, those trees are more valuable for preventing expensive erosion problems over the years. Tree removal and clearing activities change how water will be absorbed on your waterfront home site—a change that can cause landslides or slumping. Stick to your landscaping plan. Resist that temptation to clear everything, "while the heavy equipment's still here."
- Consider letting some of your land grow wild (you'll have less to mow). Thickets make good habitats for songbirds, and many hardy native plants (such as salal and sword fern) seldom need to be watered. A thoughtful landscaping plan can also slow erosion, thus helping to stabilize low banks and bluffs.
- Retaining native vegetation is an attractive, low-maintenance and low-risk approach.



In this illustration the trees were thinned and limbed to provide a view. Remaining trees stabilize the soil and provide privacy.

What can you do when a tree is blocking that gorgeous waterfront view?

Large conifers such as Douglas fir are irreplaceable for erosion control on Puget Sound bluffs. Before reaching for the chain saw, think about limbing or pruning an offending tree. Instead of removing a stand of trees, try removing a few. If a tree must come down, leave its roots in place. Plant deep-rooted bushes or ground cover around the stump to help make up for lost functions that the tree once provided. Stumps may be ground down, but should never be removed if they are near a steep slope. Topping is not recommended as it can harm the trees' health.

UNDERSTANDING EROSION

Bluff erosion occurs naturally on Puget Sound. Many bluffs are naturally unstable because of soil, slope and water conditions. Development activities, such as clearing vegetation and modifying site drainage, can make erosion worse. Most slope failures are directly related to the buildup of water in the soil.

Get to know and understand your property and the nature of erosion on the bank before you do anything. Often this means getting a geologist to evaluate the situation.

Be smart and ask questions. Engineered solutions such as bulkheads and rock seawalls may be appropriate, but are often unnecessary and may be very expensive. In addition, these structures fundamentally alter natural shorelines and can lead to long-term damage to the beach.

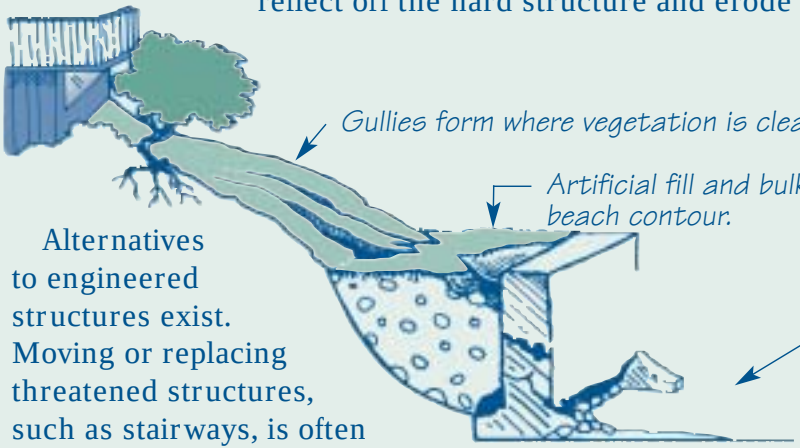
Questions to ask:

- If there is erosion, is it primarily due to wave action or is it more related to soil conditions upslope?
- How serious is the erosion problem? Is doing nothing a cost-effective solution?
- If erosion is related to drainage, what is causing the problem?
- What ***range*** of options do I have for addressing this problem?

Solutions may include:

- Reducing uncontrolled runoff from lawns, roofs and driveways.
- Planting shrubs and/or trees to stabilize soils and absorb water.
- Engineered structures such as bulkheads and retaining walls.
- Other approaches such as beach nourishment or bioengineering.

Bulkheads and rock walls can reduce erosion caused by wave action, but they often do little to prevent continued erosion and sliding of the upper bank. They will not prevent the beach itself from eroding. In fact, bulkheads can cause increased erosion of the beach when waves reflect off the hard structure and erode nearby shorelines.



Alternatives to engineered structures exist. Moving or replacing threatened structures, such as stairways, is often cheaper than protecting them in place. Planting fast growing erosion-resistant plants such as willows can help stabilize eroding areas, while maintaining important habitat. On some sites, renourishing the beach with gravel can actually reduce wave action.

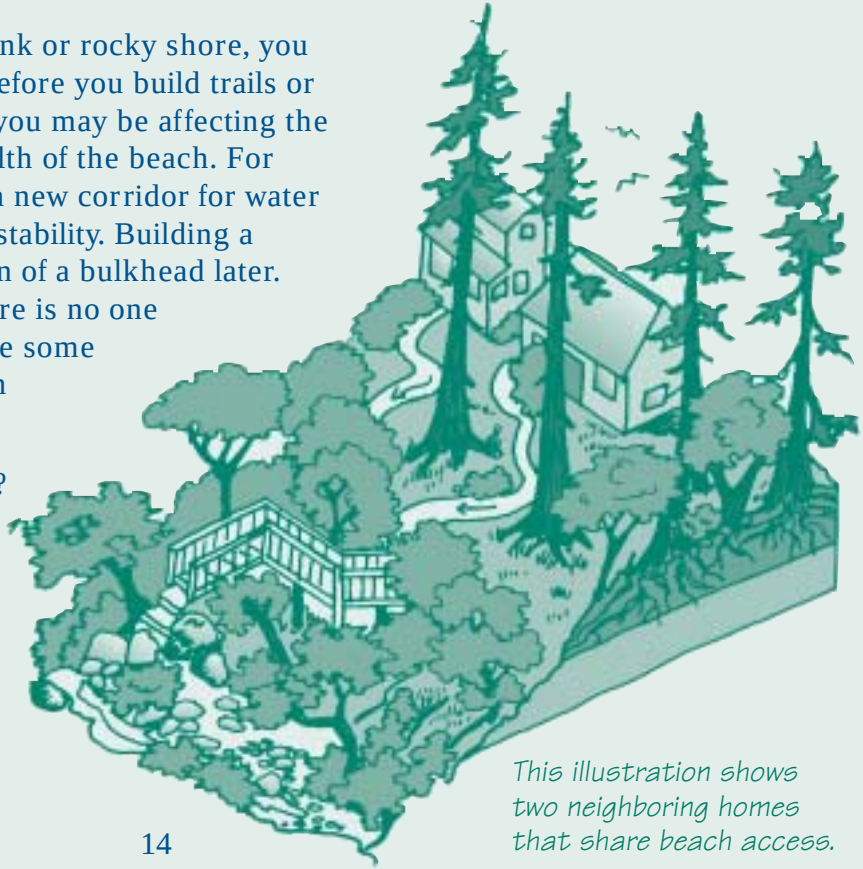
Whichever option you choose, ask questions and check with your local planning department about the approach. Solutions are site specific.

BEACH ACCESS

Whether you live on a bluff, low bank or rocky shore, you probably want access to the beach. Before you build trails or stairways, think carefully about how you may be affecting the stability of your property and the health of the beach. For example, clearing a path may create a new corridor for water to drain, creating gullies and slope instability. Building a stairway may require the construction of a bulkhead later.

Every property is different and there is no one solution for creating access. There are some important questions to consider when attempting to create beach access:

- Where is the best site for access?
- Are there options for shared access in the neighborhood?
- How much clearing will be involved?
- Will it cause negative impacts to the beach?
- Will it be safe?
- What permits will be needed?



This illustration shows two neighboring homes that share beach access.

WHAT'S THAT DOING HERE?

Some plants and animals don't really belong on our shores but have managed to sneak in and make themselves at home. In some instances, they can be more successful than native species at exploiting the local environment. Wildlife authorities believe this is the case with the European green crab, a recently introduced shellfish-eater from the Atlantic coast.

Spartina is an invasive cordgrass that is taking over tideflats in Puget Sound and coastal Washington, altering natural fish and shellfish habitats and excluding native vegetation. If you see circular clumps of grass growing in a mudflat it may be Spartina.

Himalayan blackberry, Scot's broom and Japanese knotweed aggressively grow along the shoreline. They will outcompete most other vegetation. In most cases they should be removed. If they are growing on an unstable bank or bluff, be sure to get some professional advice and have a revegetation plan in mind before clearing the slope.

Contact your county weed control board or the Washington Department of Agriculture for technical assistance and free advice about getting rid of these and other unwelcome plant guests.

Runoff from failing on-site septic systems can contaminate beaches, making shellfish from these sites inedible. It can also cause nearby waters to be unhealthy for wading or swimming.

Because so much of the septic action takes place underground, how can you tell if your system is doing its job—and not polluting Puget Sound? Here are some things to look for:

- Water pooling in your yard or accumulating elsewhere
- Foul odors
- Dark grey or black stains in soil of the drainfield or surroundings
- Poorly flushing or backed-up toilets
- Excessive algae growth on drainage pipe outlet on bulkhead or as visible seeps on the beach.

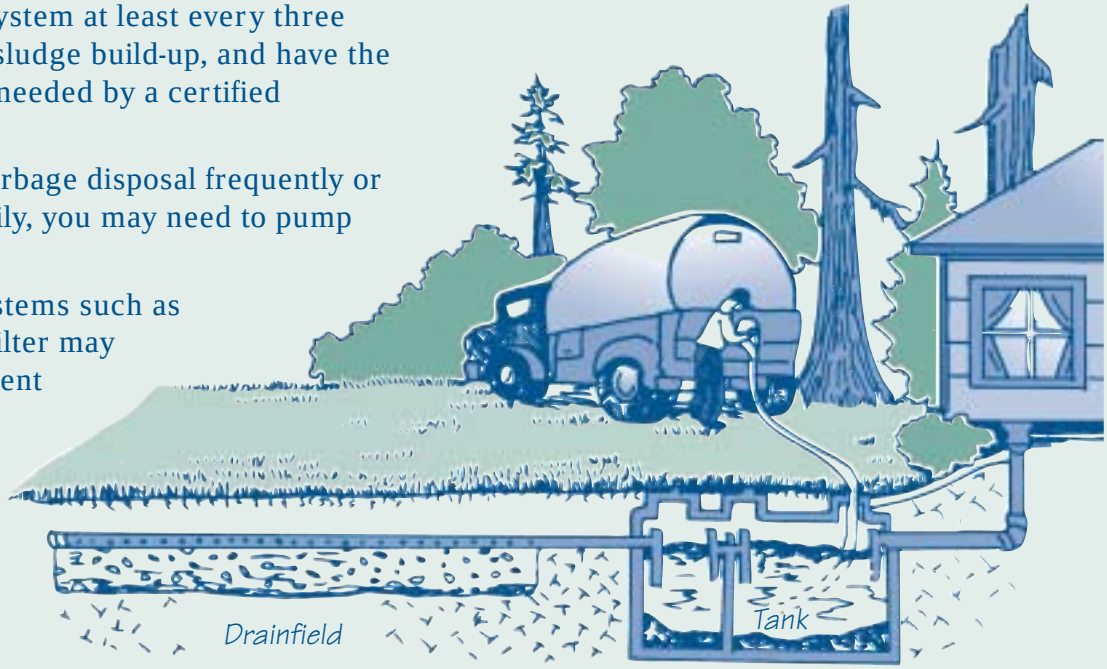
If you notice any of these signs, you may need to pump your system or have other maintenance work performed. Call your local health department or a septic professional for advice.

Most importantly, remember that septic systems require routine maintenance, inspection and pumping to operate properly. When properly sited and maintained, an on-site septic system can provide adequate long-term treatment of sewage.

Inspect your system at least every three years to inspect sludge build-up, and have the tank pumped as needed by a certified professional.

If you use a garbage disposal frequently or have a large family, you may need to pump more frequently.

Alternative systems such as mound or sand filter may need more frequent maintenance.



Conventional On-site Septic System

To keep your septic system operating:

- Don't use septic tank cleaning compounds or additives. They can impair the tank's efficiency and may damage the drainfield. Additives don't take the place of pumping.
- Conserve water to reduce the volume of water that flows through your drainfield. Also, space the timing of washing machines and dishwashers so the system doesn't get sudden large surges of water.
- Only put waste and toilet paper into the tank—anything else will eventually clog the system. Food scraps should be composted or disposed of in trash cans.

Modern low flow toilets help reduce the volume of water that goes into septic tanks.

PLAY BY THE RULES

- Everyone wants to do the right thing for their waterfront property. However, not everyone has the same idea of what the right actions should be. For this reason, federal, state and local guidelines and laws have been drafted, establishing rules for work performed in or near the Sound. Before you roll up your sleeves and get involved in any project that has the potential to affect the Sound's bluffs and beaches, it's imperative that you familiarize yourself with the permitting system.
- Every city and county has a shoreline master program that regulates shoreline activities. You'll need to check with your local city or county government before proceeding with any clearing, grading or construction along shorelines. Depending on the type of project, a site visit or special permit may be required.
- The Washington Department of Fish and Wildlife is responsible for protecting the Sound's marine resources. They may also require a site visit and a permit, depending on the type of project.
- When contacting any government agency with questions about a planned project on your shoreline property, have the correct address or approximate location of the land. Knowing the parcel number and legal description of the land will also help the process go smoothly and swiftly. A directory of frequently called government agencies can be found on the back cover of this book.

Some people love their waterfront property so much that they want to keep it in the same wonderful condition for their children, grandchildren and everyone else to enjoy.

Shoreline property owners can avail themselves of several options for preserving and protecting their land. Some of these options entitle the owners of shoreline properties to significant tax breaks:

- Conservation easements are binding agreements between property owners and a land trust or other party. This option is appropriate for a person who wants to remain in possession of the land while restricting its future development or use.
- Open space current use taxation (CUT) programs allow local governments to reduce property taxes on private lands that are classified as open space. Qualifying properties include land that would promote conservation of soils, wetlands, beaches or tidal marshes, as designated by a city or county's comprehensive plan.
- Outright donation ensures that the land will be managed and maintained by a conservation organization or land protection agency

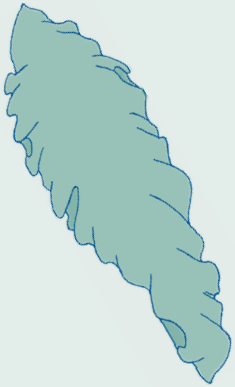
Contact your local government agency, land trust or land conservation group to learn the particulars of these all-around good deals.

EXPLORING THE BEACH

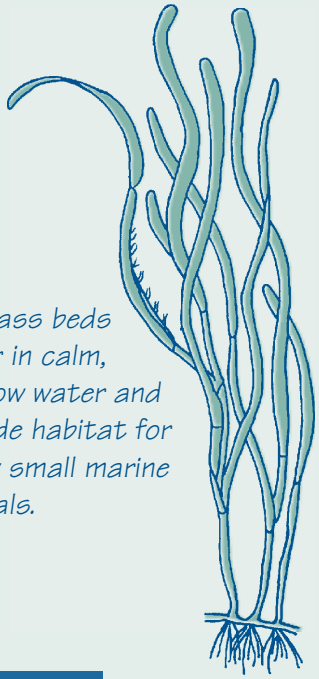
There's a lot to explore at the beach, but please be thoughtful and follow these guidelines:

- If you pick up a rock, please put it back the way you found it so the creatures living on its underside aren't exposed to the sun and air.
- Fill in any holes that you dig.
- Call your local health department to check on the safety of harvesting shellfish in the area and be sure to get a permit.
- Don't scare away wildlife.

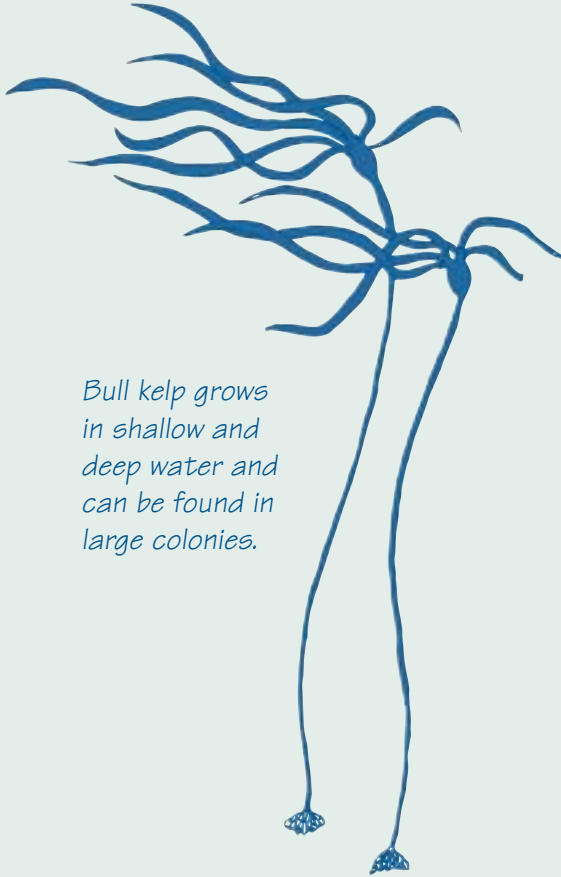
MARINE PLANTS



Sea lettuce, an edible algae, is common to Puget Sound beaches. Harvest is regulated by the Washington Department of Fish and Wildlife.



Eelgrass beds occur in calm, shallow water and provide habitat for many small marine animals.



Bull kelp grows in shallow and deep water and can be found in large colonies.

Marine plants are a vital part of the food web. Do not disturb or remove plants from the beach.

ADDITIONAL RESOURCES

For additional stewardship ideas and information about Puget Sound resources check out the "Puget Soundbook" by James A. Kolb and Diane Boardman available from the Puget Sound Water Quality Action Team at 1-800-54-SOUND.

For more technical information on Puget Sound's shoreline processes, geology, biological life and natural history, check your library or bookstore for these references:

Downing, John. 1983. The Coast of Puget Sound - Its Processes and Development. Puget Sound Books, University of Washington Press.

Kozloff, Eugene N. 1983. Seashore Life of the Northern Pacific Coast. University of Washington Press.

Kruckeberg, Arthur R. 1991. The Natural History of Puget Sound. University of Washington Press. ISBN 0-295-97019-7.

Terich, Thomas A. 1987. Living with the Shore of Puget Sound and the Georgia Strait. Duke University Press, Durham. Sponsored by the Audubon Society. ISBN 0-8223-0745-6.

Yates, Steve. 1988. Marine Wildlife of Puget Sound, the San Juans, and the Strait of Georgia. The Globe Pequot Press, Chester, Connecticut.

For additional technical information on shoreline bluffs and erosion issues refer to:

Menashe, Elliott. 1993. Vegetation Management: A Guide for Puget Sound Bluff Property Owners. Washington Department of Ecology Publication #93-31.

Myers Biodynamics Inc. and Lorilla Engineering, Inc. 1995. Surface Water and Groundwater on Coastal Bluffs: A Guide for Puget Sound Property Owners. Washington Department of Ecology Publication #95-107.

Myers Biodynamics Inc. 1993. Slope Stabilization and Erosion Control Using Vegetation: A Manual of Practice for Coastal Property Owners. Washington Department of Ecology Publication #93-30.

Department of Ecology publications are available by calling (360) 407-7472.

Websites:

Puget Sound Water Quality Action Team: ***www.wa.gov/puget_sound***
Marine Biotoxin Bulletin: ***www.doh.wa.gov/ehp/sf/biotoxin.htm***
Island County Beach Watchers: ***www.maxweltonsolutions.com/bw***
Washington Sea Grant: ***www.wsg.washington.edu***

FOR MORE INFORMATION

Permit and health department information by county:

Clallam County Environmental Health Department: (360) 417-2258
Clallam County Planning Division: (360) 417-2594

Island County Department of Community Development: (360) 679-7339
Island County Health Department: (360) 679-7350

Jefferson County Planning: (360) 385-9123
Jefferson County Community Development: (360) 379-4450

King County Development and Environmental Services: (206) 296-6600
King County-Seattle Department of Public Health: (206) 296-4932

Kitsap County Department of Community Development: (360) 337-7181
Kitsap-Bremerton Health District: (360) 692-3611

Mason County Department of Community Development: (360) 427-9670
Mason County Health Department: (360) 427-9670

Pierce County Planning and Land Services: (253) 798-7275
Pierce-Tacoma Health Department: (253) 798-6470

San Juan County Permit Center: (360) 378-2354
San Juan County Health Department: (360) 378-4474

Skagit County Planning and Permit Center: (360) 336-9410
Skagit County Health Department: (360) 336-9380

Snohomish County Department of Planning and Development Services: (425) 388-3311
Snohomish Health District: (425) 339-5250

Thurston County Department of Development Services: (360)754-4001
Thurston County Septic Hotline: (360) 357-2490
Thurston County Health Department: (360) 786-5455

Whatcom County Planning and Development Services: (360) 676-6907
Whatcom Health Department: (360) 676-6724

Washington State Department of Health Marine Biotoxin Hotline: (800) 562-5632
Adopt a Beach: (206) 542-1275
Island County WSU Beach Watchers: (360) 679-7391
Puget Sound Water Quality Action Team: (800) 54-SOUND
Department of Fish and Wildlife: (360) 902-2200
Department of Ecology: (360) 407-6000

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